

Developing China's Health Informatics Program Through Integrating the Developed Country's Experience

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Abstract

Health informatics (HI), as an emerging discipline, is playing an increasingly important role in improving health care system. This paper introduces the health informatics program of the University of Wollongong (UOW) – the leading university in Australian health informatics education. It also provides suggestions on the establishment of teaching programs, selection of teaching materials, organisation of teaching activities, assessment tasks, training and skill base of academic staff, and research and teaching resources for developing China's Health Informatics programs.

Background: In the last few years, three developments, which are very important to China, have occurred and which are indicative of a substantial shift in orientation. Firstly, WTO (WTO 2001) successfully concluded negotiations on China's terms of membership on September 17, 2001. Secondly, the Games of the 29th Olympiad in 2008 (Xinhuanet 2001) were awarded to the city of Beijing. Finally, Expo officials (Muzi News 2002) announced in Monaco that Shanghai would host the 2010 World Expo.

The above three matters would bring many changes, challenges and pressures for China. China's entry to WTO, though only a short period of time, has brought significant changes to China. These changes also are accelerating the readjustment and reform of China's higher education, including medical education.

The above events are just a few examples of an increasingly international participation that has far-reaching influence on China in areas such as economics, law, agriculture, retail, IT, finance, insurance, trade, real estate, entertainment market, employment market, health and also, education sector. These developments have wide impacts across the economy. The health care industry is also under pressure of internationalism and economic reform. This includes improving work efficiency and service outcome. As an important facilitator for better health delivery, health informatics is increasingly recognized as an important discipline by the health industry and health academia.

Health Informatics education and research are still emerging disciplines and there are many opportunities for this field to have an impact upon healthcare planning, delivery and evaluation. There is a world-wide shortage of skilled and experienced health informatics practitioners to support national and enterprise agenda for health

information management. Currently, the study and research in Health Informatics is still in a preliminary stage in China.

Health Informatics Higher Education in China: By July 1, 2003, there are 1517 established higher educational institutions (EDU 2003) in China. However, by April 2003, only 29 higher educational institutions provided 53 programs related to health informatics. This includes 28 bachelor, 21 master and 4 doctorate programs (Wu, Yu & Soar, 2003).

In April 2000, the Ministry of Health of P.R. China (Gao 2003) published “Foundational Function Specifications for Health Information System” to drive the application of information and communication technology in health services, preventive medicine, research, training and education and planning. It is anticipated that the Chinese national health informatics standard will be established before 2010. Health Level 7 (HL7) (DPC 2002) will become Chinese national standard in health information system communication and integration.

Current HI Higher Education in Australia In 2001 HISA (Health Informatics Society of Australia) was commissioned by the Department of Health and Ageing (DoHA) to undertake research into health informatics education. The research was coordinated for HISA by the Initiative for e-Health Research Center (IeH) at the University of Wollongong. The project team included Health Informatics education experts from several universities.

The research (Soar 2002) identified the following facts:

- In 2001 most (24 out of 38) Australian universities offered some form of HI education.
- HI education is predominantly offered as part of education for health disciplines rather than the informatics or the computing discipline.
- HI should be driven by health practitioners more than technologists.
- All programs are specifically labelled 'Health Informatics', 'Medical Informatics', 'Nursing Informatics', 'Health Information Management', 'Health Communication Systems' or 'Health Information Systems' (eg. Master in Health Informatics)
- All programs are offered in Health Science with a strong content of computing.
- Out of the 50 programs and courses (including short programs and self-paced modules) identified in the inventory
 - The majority (36) were offered by faculties /departments/schools specialising in Health Studies.
 - Only 4 programs were offered by faculties/departments/schools specialising in Information Technology Studies.
 - A minority (9) were offered by collaborative partnership between Health related and Computing related faculties/departments/schools.
 - One course was offered through an Economics faculty.

Australian HI programs are composed of Informatics, Communication, Statistics, Management subject, besides Nursing and/or health courses. Some programs have special entry requirement, such as Bachelor of Nursing Informatics offered by Central Queensland University. The program (CQU 2003) is available to registered nurses who hold a certificate from a hospital based program in their own country, a diploma or degree in nursing from a college or university.

Future Directions: New and emerging trends in IM/IT (Information Management and Information Technology) will have implications for HI education. Trends are associated with mobile technology, technology and data standards, a move from administrative to clinical systems, decision-support systems and consumer access to information (Soar et. 2002).

The research from IeH indicates that there are top 10 key topics for future HI graduates (see Table)

Table: Top 10 Key topics for future HI graduates

A - Clinical Decision Making and Decision Support
<ul style="list-style-type: none"> - Decision making in the Health Sciences - Reasons for the necessity of systematically processing data, information and knowledge in medicine and healthcare - Benefits and constraints of using information and communication technology in medicine and healthcare - Evaluation methods in health informatics
B - Health Informatics, Health Information Systems
<ul style="list-style-type: none"> - Computer concepts for health informatics - Health information systems management - Electronic Health record developments
C - Health Information Systems and Data
<ul style="list-style-type: none"> - Electronic medical records - structure, design and analysis principles of the health record including notions of data quality, minimum data sets and general applications of the electronic health record - Standards in health and health informatics
E - Security, Privacy, Ethics and other issues
<ul style="list-style-type: none"> - Confidentiality, security, legal and ethical issues with healthcare data

(source: Soar J. 2002)

The majority of health information systems currently implemented in China is targeted at hospital level administrative system management. A patient-centered approach is yet to be taken. No health information strategy and development plan has been made at the national level. There is a need for Chinese health informatics to develop a national strategy for health information system plan, health informatics curriculum development, education and industry capacity building.

The future direction for health care in China will be e-Health, which involves a multidisciplinary approach including informatics, communication, health, security, multimedia, marketing, advertising, management, finance, business, law, education and training including online, real-time, service, collaborations and community perspectives. Mobile-health based upon China's rapid adoption of cellular technology may be well suited to the vast size of China in terms of distance as well as dispersed population. China's higher educational institutions will play the very important roles in the future reform.

Recommendation

Some suggestions is offered below regarding teaching materials, core courses, program focus, teaching language, training and skill of academic staff, and study resources for developing China's Health Informatics programs.

– Teaching Materials

A combination of overseas textbooks, Chinese textbooks, Lecturers' notes, study guide and up-to-date quality publications.

– Core Courses

The following units could be considered as the core courses.

- Foundations of Health/Nursing Informatics
- Database design and implementation
- Electronic health records
- Concepts and Issues in Healthcare Computing
- Management of health information systems
- Health information Law and ethics
- E-Health Marketing

– HI Program

It is recommended that the following three majors in HI can be developed at the beginning stage. These programs can be offered as Bachelor Degree or Double Degree in health and computing programs.

- Health Informatics (Major in Information Technology)
- Health Informatics (Major in Information System Management)
- Health Informatics (Major in Health Management)

– Training strategies for lecturers

Inviting overseas experts to give lectures

Short-term overseas training

Joining the relative conferences and training courses

– HI Lab

Developing the joint Lab, which are combined with university, research units, health manufacturers, health services and relative bodies.

As an example, the Initiative for e-Health at the University of Wollongong has established a consortium to build an m-health test-bed. Exploration partners involved include equipment manufacturers, major telecommunications companies, several area health services, divisions of general practice and other impacted bodies.

The opportunities: The Ministry of Education of P.R.China (Chen 2002) recognized that Chinese higher educational institutions have to reform curricula, teaching materials, teaching methods, examination and assessment tools through incorporating

international teaching materials for reference; and specifically support and encourage universities to collaborate with other countries' higher educational institute. With the country's coming WTO accession, some Chinese universities (Xinhuanet 2001) have been restructuring their curricula and actively seeking collaboration with overseas institutions.

Though collaboration, overseas institutions enjoy the opportunities to showcase their knowledge and skills in Chinese market. In the meantime, Chinese institutions get the pathway to develop HI program through integrating the developed countries' experiences. This avoids 'reinventing the wheel' in its progress. This is definitely a win-win strategy for all the parties engaged in the development.

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